ZOOLOGY.—*Revision of the bathypelagic prawns of the family Acanthephyridae, with notes on a new family, Gomphonotidae.*[1] FENNER A. CHACE, JR., Museum of Comparative Zoology. (Communicated by WALDO L. SCHMITT.)

Owing to difficulties at this time in the publication of these observations in monographic form as was the original intention, it has seemed advisable to present an abstract of that data in the form of a key to the species of the family with one important reference for each species, together with the synonyms of each. Inasmuch as many of these forms are cosmopolitan, it is deemed unnecessary to discuss the distribution of the group at this time.

The material covered has been drawn from the collections in the Museum of Comparative Zoölogy and the U. S. National Museum made by the U. S. Steamers *Blake* and *Albatross* and the auxiliary ketch *Atlantis* of the Woods Hole Oceanographic Institution.

This opportunity is taken to acknowledge the invaluable assistance offered to me by the staffs of the Museum of Comparative Zoölogy and the U. S. National Museum, without which this paper would have been impossible. I wish to thank especially Dr. Hubert Lyman Clark, Dr. Elisabeth Deichmann, Dr. Thomas Barbour, and Dr. Henry B. Bigelow of the Museum of Comparative Zoölogy and Dr. Waldo L. Schmitt, Dr. Mary J. Rathbun, and Mr. Clarence R. Shoemaker of the U. S. National Museum.

The Acanthephyridae may be defined as that group of the Decapoda Natantia in which the first two pairs of pereiopods or "walking legs" are chelate, similar, of moderate size, and with an undivided carpus; the last three pairs of pereiopods are neither chelate nor abnormally long; all the pereiopods are provided with an exopod; there is no lash on the exopod of the first maxilliped; and the mandibles are imperfectly cleft.

The seven genera and 59 species and varieties listed by de Man in 1920 are here reduced to six genera and 44 species.

The genus omitted is *Gonatonotus*, of which there is but one species, *G. crassus* A. Milne Edwards, 1881. Although only two specimens of this aberrant form have heretofore been recorded, it has been my privilege to examine no less than 13 specimens, many of them from the Philippine region, despite the fact that the species had not been previously recorded from the Pacific. An examination of the mouthparts disclosed that the mandible is composed of but one lobe and

[1] Received August 27, 1935.

the exopod of the first maxilliped is provided with a long lash very similar to that found in the Pandalidae. Inasmuch as this character completely excludes this prawn from the Acanthephyridae, and the undivided carpus of the second pair of pereiopods prevents uniting it with the Pandalidae, it is proposed that this form be placed in a separate family. Since the name *Gonatonotus* is preoccupied for a genus of Parthenopid crabs (White, Proc. Zool. Soc., London, 15: 58, 1847), I suggest the name **Gomphonotus**[2] for the genus of prawns, and the family may then be known as the **Gomphonotidae.**

Eleven species not examined by the author have been marked with an asterisk (*) in the key below.

KEY TO THE GENERA OF THE ACANTHEPHYRIDAE

1. Exopods of at least the third maxillipeds and first pair of pereiopods foliaceous and generally rigid; outer margin of antennal scale usually armed with a series of spines; telson not truncate at tip, but ending in a sharp point; eyes large and well pigmented.... Genus 6. *Oplophorus*
   None of the exopods of the pereiopods foliaceous or rigid.....2
2. Last four abdominal somites, at least, carinate along dorsal midline.. 3
   Sixth abdominal somite never dorsally carinate.....4
3. No straight ridge or carina running entire length of lateral surface of carapace from orbit to hind margin along median lateral line; hind margin of hepatic furrow not cut off abruptly by an oblique ridge or carina; incisor process of mandible toothed for its entire length..... ..... Genus 1. *Acanthephyra*
   Carapace decorated with at least one straight carina traversing the lateral surface from hind margin of orbit to posterior edge of carapace; hind margin of hepatic furrow abruptly cut off from branchial region by an oblique carina; anterior half of incisor process of mandible unarmed.. .....Genus 2. *Notostomus*
4. Ischial and meral joints of pereiopods very broad and much compressed laterally.....Genus 3. *Ephyrina*
   Pereiopods normal.....5
5. Eyes very small and poorly pigmented; anterior margin of first abdominal somite entire, not toothed; telson terminating in a truncate, spinose tip.....Genus 4. *Hymenodora*
   Eyes very large and well pigmented; anterior margin of first abdominal somite armed with a distinct lobe or tooth overlapping hind margin of carapace; telson terminating in a sharp-pointed end-piece laterally armed with spines.....Genus 5. *Systellaspis*

[2] γομφος, νοτος.

Genus 1. ACANTHEPHYRA A. Milne Edwards, 1881

KEY TO THE SPECIES OF ACANTHEPHYRA

1. Posterior third, at least, of carapace not dorsally carinate.....2
   Carapace dorsally carinate throughout its length.....13
2. Integument thin and soft.....3
   Integument hard and firm.....7
3. Carina supporting branchiostegal spine not reaching to posterior half of carapace.....4
   Carina supporting branchiostegal spine reaching almost or quite to hind margin of carapace.....6
4. Rostrum very high and laterally compressed to a thin crest; small spine on third abdominal somite (See: Balss, 1925, p. 262).....
   .....*A. tenuipes* (Bate,1888)*
   (=*Tropiocaris tenuipes* Bate, 1888)
   Rostrum depressed, not thin and high.....5
5. Large, laterally compressed spine on third abdominal somite reaching to posterior third of fifth somite (See: Lenz and Strunck, 1914, p. 327)..
   .....*A. brevirostris* Smith, 1885.
   (=*Hymenodora duplex* Bate, 1888)
   No spine on third abdominal somite (See: Kemp, 1906, pp. 19 and 23)
   .....*A. rostrata* (Bate, 1888)*
   (=*Hymenodora rostrata* Bate, 1888)
6. Rostrum little more than half as high as long (See: Balss, 1925, p. 264)
   .....*A. indica* Balss, 1925.*
   (=*Acanthephyra* sp. de Man, 1920)
   Rostrum higher than long (See: Balss, 1925, p. 262).....
   .....*A. cucullata* Faxon, 1893.
7. Telson dorsally sulcate on proximal portion.....8
   Telson dorsally ridged on proximal portion.....12
8. Carina supporting branchiostegal spine very prominent and reaching to anterior margin of branchial region.....9
   Carina supporting branchiostegal spine, if present, short and obscure..
  10
9. Rostrum less than half as long as carapace (See: Balss, 1925, p. 261)..
   .....*A. curtirostris* Wood-Mason, 1891.
   (=*A. acutifrons* Bate, 1888, part)
   Rostrum more than three-fourths as long as carapace (See: Bate. 1888, p. 736).....*A. media* Bate, 1888.
   (=*A. media* var. *obliquirostris* de Man, 1916)
10. Eyes minute, very much narrower than eyestalks (See: Alcock, 1901, p. 80).....*A. microphthalma* Smith, 1885.
    (=*A. longidens* Bate, 1888)
    Eyes normal, slightly broader than eyestalks.....11

11. Branchiostegal spine supported by a short carina (See: Stephensen, 1923, p. 44)..... *A. purpurea* A. Milne Edwards, 1881.
(=*Miersia agassizii* Smith, 1882; *A. sica* Bate, 1888; *A. acanthitelsonis* Bate, 1888; *A. kingsleyi* Bate, 1888; *A. rectirostris* Riggio, 1900; *A. purpurea*, var. *multispina* Coutière, 1905; *A. parva* Coutière, 1905; *A. haeckeli* Thiele, 1905; *A. batei* Stebbing, 1905)

Branchiostegal spine minute and supported by neither carina nor ridge (See: Balss, 1925, p. 256)..... *A. sanguinea* Wood-Mason, 1892.

12. No carina supporting branchiostegal spine (See: de Man, 1920, p. 61) ..... *A. armata* A. Milne Edwards, 1881.

Prominent carina supporting branchiostegal spine (See: Wood-Mason and Alcock, 1894, p. 156)..... *A. fimbriata* Wood-Mason, 1894.
(=*A. armata* var. *fimbriata* Wood-Mason, 1894; *A. armata* (part) of many authors)

13. First abdominal somite dorsally carinate.....14

First abdominal somite not dorsally carinate.....16

14. Hepatic spine on carapace (See: Balss, 1925, p. 260)..... ..... *A. corallina* (A. Milne Edwards, 1883)
(=*Notostomus corallinus* A. Milne Edwards, 1883; *Acanthephyra valdiviae* Balss, 1914)

No hepatic spine on carapace.....15

15. Telson dorsally grooved (See: Balss, 1925, p. 261)..... ..... *A. acutifrons* Bate, 1888.

Telson distinctly ridged on proximal half (See: Balss, 1925, p. 257).... ..... *A. carinata* Bate, 1888.

16. Telson dorsally ridged.....17

Telson dorsally grooved.....19

17. Rostrum armed dorsally almost to tip (See: Faxon, 1895, p. 162).... ..... *A. approxima* Bate, 1888.

Distal half of rostrum dorsally unarmed.....18

18. Second abdominal somite not dorsally carinate (See: Kemp, 1906, p. 21)..... *A. pulchra* A. Milne Edwards, 1890.*

Second abdominal somite dorsally carinate (See: Balss, 1925, p. 258).. ..... *A. eximea* Smith, 1884.
(=*A. brachytelsonis* Bate, 1888; *A. edwardsi* Bate, 1888; *A. angusta* Bate, 1888)

19. Integument firm and pubescent (See: Balss, 1925, p. 259)..... ..... *A. kempi* Balss, 1925.*

Integument thin and membranous (See: de Man, 1920, p. 69)..... ..... *A. sibogae* de Man, 1916.

Genus 2. NOTOSTOMUS A. Milne Edwards, 1881.

KEY TO THE SPECIES OF NOTOSTOMUS

1. First two abdominal somites not dorsally carinate; dorsal carina of

carapace not denticulate on posterior two-thirds of its length; only one complete longitudinal carina on carapace.....2

All abdominal somites dorsally carinate; dorsal carina of carapace denticulate for practically its entire length; two or more complete longitudinal carinae on lateral surface of carapace.....3

2. Integument soft but firm; sixth abdominal somite more than twice as long as fifth (See: Balss, 1925, p. 267).....*N. vescus* Smith, 1886. (=*Acanthephyra brevirostris* Bate, 1888; *Acanthephyra batei* Faxon, 1895; *Notostomus batei* Balss, 1925)

Integument extremely thin and fragile; sixth abdominal somite once and a half as long as fifth (See: Balss, 1925, p. 266)..*N. mollis* (Smith, 1882) (=*Meningodora mollis* Smith, 1882; *Hymenodora mollis* Bate, 1888; *Notostomus fragilis* Faxon, 1895)

3. No semi-carina on posterior half of lateral surface of carapace immediately below the post-orbital.....4

A semi-carina on posterior half of lateral surface of carapace immediately below the post-orbital.....5

4. Only two longitudinal carinae on lateral surface of carapace (See: Bate, 1888, p. 829).....*N. murrayi* Bate, 1888.*

Three longitudinal carinae on lateral surface of carapace (See: A. Milne Edwards, 1881, p. 7).....*N. gibbosus* A. Milne Edwards, 1881.*

5. Four longitudinal carinae on posterior half of lateral surface of carapace 6

Five longitudinal carinae on posterior half of lateral surface of carapace; a median lateral carina at base of rostrum.....9

6. A median lateral carina at base of rostrum (See: A. Milne Edwards, 1881, p. 8).....*N. elegans* A. Milne Edwards, 1881.*

No median lateral carina at base of rostrum.....7

7. Carina along lower margin of rostrum continuous with post-orbital (See: Balss, 1925, p. 268).....*N. perlatus* Bate, 1888. (=*N. brevirostris* Bate, 1888)

Carina along lower margin of rostrum not continuous with post-orbital..8

8. Post-orbital and post-antennal carinae nearly parallel (See: Bate, 1888, p. 830).....*N. japonicus* Bate, 1888.*

Post-orbital and post-antennal carinae sharply divergent behind hepatic region (See: Smith, 1886 p. 676).....*N. robustus* Smith, 1885. (=*N. beebei* Boone, 1930)

9. Dorsal carina of carapace straight along central portion and not very high (See: Balss, 1925, p. 269).....*N. westergreni* Faxon, 1893.

Dorsal carina of carapace very high and arched.....10

10. Rostrum not reaching end of antennal scale (See: Bate, 1888, p. 826) .....*N. patentissimus* Bate, 1888.*

Rostrum reaching considerably beyond end of antennal scale (See: Balss, 1925, p. 268).....*N. longirostris* Bate, 1888. (=*N. atlanticus* Lenz, 1914)

Genus 3. EPHYRINA Smith, 1885.

Ephyrina benedicti Smith, 1885 (See: Balss, 1925, p. 269)
(=*Tropiocaris planipes* Bate, 1888; *Ephyrina hoskyni* Wood-Mason, 1891; *Ephyrina bifida* Stephensen, 1923)

Genus 4. HYMENODORA G. O. Sars, 1877.

KEY TO THE SPECIES OF HYMENODORA

1. Integument smooth, soft and membranous; rostrum not reaching beyond tips of eyes in adults (See: Balss, 1925, p. 270).....
.....*H. glacialis* (Buchholz, 1874)
(=*Pasiphae glacialis* Buchholz, 1874; *Hymenodora gracilis* Smith, 1886; *H. glauca* Bate, 1888; *H. mollicutis* Bate, 1888)

Integument rugose, soft but not particularly membranous; rostrum exceeding eyes in length and reaching to end of antennular peduncle in adults (See: Rathbun, 1904, p. 28).....*H. frontalis* Rathbun, 1902.

Genus 5. SYSTELLASPIS Bate, 1888.

KEY TO THE SPECIES OF SYSTELLASPIS

1. Abdomen not dorsally carinate on any somite; rostrum about one-third as long as carapace (See: Balss, 1925, p. 245)..*S. braueri* (Balss, 1914)
(=? *S. echinurus* Coutière, 1911; *Acanthephyra braueri* Balss, 1914; *S. densispina* Stephensen, 1923)

Abdomen carinate on third and fourth somites; rostrum more than half as long as carapace.....2

2. Hind margins of fourth and fifth abdominal somites crenate on either side of the median spine (See: Balss, 1925, p. 242).....
.....*S. debilis* (A. Milne Edwards, 1881)
(=*Acanthephyra debilis* A. Milne Edwards, 1881; *Miersia gracilis* Smith, 1882; *Acanthephyra debilis* var. *europoea* A. Milne Edwards, 1883; *Acanthephyra gracilis* Smith, 1886; *S. bouvieri* Coutière, 1905; *S. debilis* var. *indica* de Man, 1920)

Hind margins of fourth and fifth abdominal somites not crenate on either side of the median spine.....3

3. A sharp longitudinal carina near lower margin of carapace (See: Balss, 1925, p. 244).....*S. cristata* (Faxon, 1893)
(=*Acanthephyra cristata* Faxon, 1893)

No sharp carina near lower margin of carapace.....4

4. Sixth abdominal somite and anterior portion of telson smoothly rounded dorsally (See: Faxon, 1896, p. 162).....*S. affinis* (Faxon, 1896)
(=*Acanthephyra affinis* Faxon, 1896)

Sixth abdominal somite and telson deeply grooved along dorsal midline (See: Bate, 1888, p. 758).....*S. lanceocaudata* Bate, 1888.

Genus 6. OPLOPHORUS A. Milne Edwards, 1837.

KEY TO THE SPECIES OF OPLOPHORUS

1. Second, third, and fourth abdominal somites terminating in a long spine; no spine at postero-lateral angle of carapace (See: A. Milne Edwards, 1883, Pl. 30) ..... *O. spinicauda* A. Milne Edwards, 1883. (=*O. foliaceus* Rathbun, 1906; *Hoplophorus foliaceus* Kemp, 1913; *Acanthephyra anomala* Boone, 1927)

   Third, fourth and fifth abdominal somites terminating in a long spine.. 2

2. No spine at postero-lateral angle of carapace 3

   A distinct spine at postero-lateral angle of carapace; outer margin of antennal scale spinose 4

3. A distinct barb on inner margin of antennal scale near the tip; outer margin of same spinose (See: Balss, 1925, p. 249) .... *O. grimaldii* Coutière, 1905. (=*Hoplophorus grimaldii* Courtière, 1905; ? *Acanthephyra pellucida* A. Milne Edwards, ms. fide Perrier. See Kemp, p. 66, 1906)

   No barb on inner margin of antennal scale; outer margin of same devoid of spines (See: de Man, 1931, p. 369) .... *O. novae-zeelandiae* de Man, 1931.*

4. The median lateral carina at base of rostrum is subparallel to the dorsal margin; distal sixth of antennal scale unarmed; rostrum distinctly longer than antennal scale; small spine on lower margin of pleuron of first abdominal somite (See: Kemp, 1913, p. 63) .... *O. gracilirostris* A. Milne Edwards, 1881. (=*O. longirostris* Bate, 1888; *Hoplophorus smithii* Wood-Mason, 1891; *Hoplophorus typus* (part) Balss, 1925)

   The median lateral carina at base of rostrum converges posteriorly toward the dorsal midline; distal fourth of antennal scale unarmed; rostrum rarely reaching beyond tip of antennal scale; no spine on lower margin of pleuron of first abdominal somite (See: Bate, 1888, p. 762) .... *O. typus* H. Milne Edwards, 1837. (=*O. brevirostris* Bate, 1888)

Note: Since this paper was written, a specimen of *Bentheocaris stylorostratis* Bate has come to hand. It was collected with a closing net in 900 fathoms just west of the Gulf Stream off the coast of New Jersey on September 1, 1935 by the *Atlantis* of the Woods Hole Oceanographic Institution. This specimen is 57 mm. long, the largest of the five recorded specimens, and is apparently an adult female. An examination of the mouth-parts discloses that this species belongs in the genus *Acanthephyra* near *A. cucullata* Faxon. This same conclusion was reached previously by Dr. W. T. Calman and published in Union S. Africa Fish. Mar. Biol. Survey **4(3)**: 14. 1925.

LITERATURE CITED

ALCOCK, A. Descr. Cat. Ind. Deep-Sea Crust. in Ind. Mus. Calcutta. 1901.
BALSS, H. Wiss. Ergebn. Deutschen Tiefsee-Exped. 20, no. 5. 1925.
BATE, C. SPENCE. Rep. Zool. Challenger Exped. 24. 1888.
EDWARDS, A. MILNE. Ann. Sci. Nat. Ser. 6, **11**, art. 4. 1881.
EDWARDS, A. MILNE. Recueil de figs. de Crust. nouv. ou peu connus. Paris. 1883
FAXON, W. Mem. Mus. Comp. Zoöl. **18**. 1895.
FAXON, W. Bull. Mus. Comp. Zoöl. **30**. 1896.
KEMP, S. W. Fisheries, Ireland, Sci. Invest. 1. 1906.
KEMP, S. W. Trans. Linn. Soc., London, ser. 2, Zool. **16**, pt. 1. 1913.
LENZ, H. and STRUNCK, K. Dekap. der Deutschen Südpolar Exped. 1. 1914.
MAN, J. G. DE. Decap. of the Siboga Exped., Monogr. 39a[3]. 1920.
MAN, J. G. DE. Jour. Linn. Soc. London. **37**. 1931.
RATHBUN, M. J. Harriman Alaska Exped. 10. 1904.
SMITH, S. I. Ann. Rep. U. S. Fish Comm. for 1885. 1885.
STEPHENSEN, K. Rep. Dan. Ocean. Expeds. II, Biology, pt. D3. 1923.
WOOD-MASON, J. and ALCOCK, A. Jour. Asiat. Soc. Bengal. **63**, pt. 2, no. 3. 1894.

ZOOLOGY.—*Nomenclatorial changes involving California polychaete worms.*[1] OLGA HARTMAN, University of California. (Communicated by MARY J. RATHBUN.)

In the course of a study of the marine annelid fauna of California certain revisions in the current names of a number of species appear necessary:

Cirriformia nom. nov. pro *Audouinia* Quatrefages, 1865, nec A. Costa. *Audouinia* was used by Costa in 1834 and 1851 for a genus of amphipods and is now considered a synonym of *Corophium* (cf. Stebbing, 1906, p. 685). Two common species from California are (1) *Cirriformia luxuriosa* (Moore, 1904) whose range is hereby extended northward to Dillon Beach, Marin County, California, and (2) *C. spirabrancha* (Moore, 1904) known from Mendocino County (Chamberlin, 1919) south to San Diego, California (Moore, 1904).

Eteone pacifica nom. nov. pro *E. maculata* Treadwell, 1922, nec OErsted, 1843. This species described from Friday Harbor (Treadwell), was collected by Mr. C. E. Moritz and the author in 1933 at Moss Beach, San Mateo County, California.

Stylarioides dimissus nom. nov. pro *S. minuta* Treadwell, 1914, nec *Pherusa minuta* Quatrefages, 1865, which is a *Stylarioides*. Originally described from La Jolla, California, this species is now known to range northward to Moss Beach, San Mateo County, California.

Changes necessitating a shift of generic name or reduction to synonymy follow. The synonyms in each case follow the signs of equality:

[1] Received October 3, 1935.